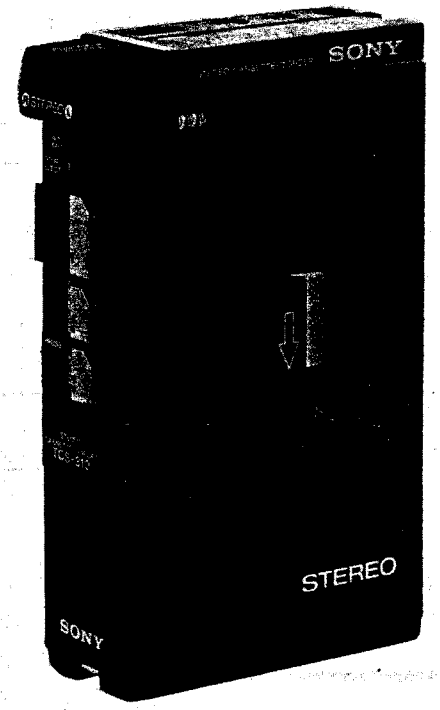
TCS-310

US Model
Canadian Model
AEP Model
UK Model
E Model



STEREO CASSETTE-CORDER

SPECIFICATIONS

Recording system: 4-track 2-channel stereo

Fast winding time: Approx. 2 min. with Sony Cassette C-60

Frequency response: 50—10,000 Hz
40—14,000 Hz (playback)

Speaker: Approx. 5 cm (2 inches)

Power output (at 10% harmonic distortion): Speaker: 320 mW
Headphones: 30 mW x 2 at load impedance 32 Ω

Input: Microphone input jack (stereo minijack)
Sensitivity 0.2 mV (—72 dB)
for low impedance microphone

Output: Headphones jack (stereo minijack)
Load impedance 8—300 Ω

Power requirements: 6 V dc, four batteries, size AA (IEC designation R6) or optional Sony BP-23 rechargeable battery pack
External power input jack (required power 6 V dc)
12 V car battery with optional Sony DCC-127A Car Battery Coard
US model: 120 V ac, 60 Hz with optional AC-9W AC Power Adaptor
UK model: 240 V ac, 50 Hz with optional AC power Adaptor AC-15A
Canadian model: 120 V ac, 60 Hz with optional AC Power Adaptor AC-9
AEP model: 110 or 220 V ac, 50 Hz with optional AC Power Adaptor AC-456C
E model: 110, 120, 220 or 240 V ac, 50/60 Hz with optional AC power Adaptor AC-4A

Battery life: Approx. 3 hours using Sony SUM-3 (NS) NEW Super Batteries or Eveready No. 1215 Heavy Duty batteries
Approx. 6 hours using Eveready No. E91 alkaline batteries

Dimensions: Approx. 93.5(w) x 161.5(h) x 41(d) mm (3¾ (w) x 6⅜ (h) x 1⅝ (d) inches) not including projecting parts and controls

Weight: Approx. 560 g (1 lb 4 oz) including batteries

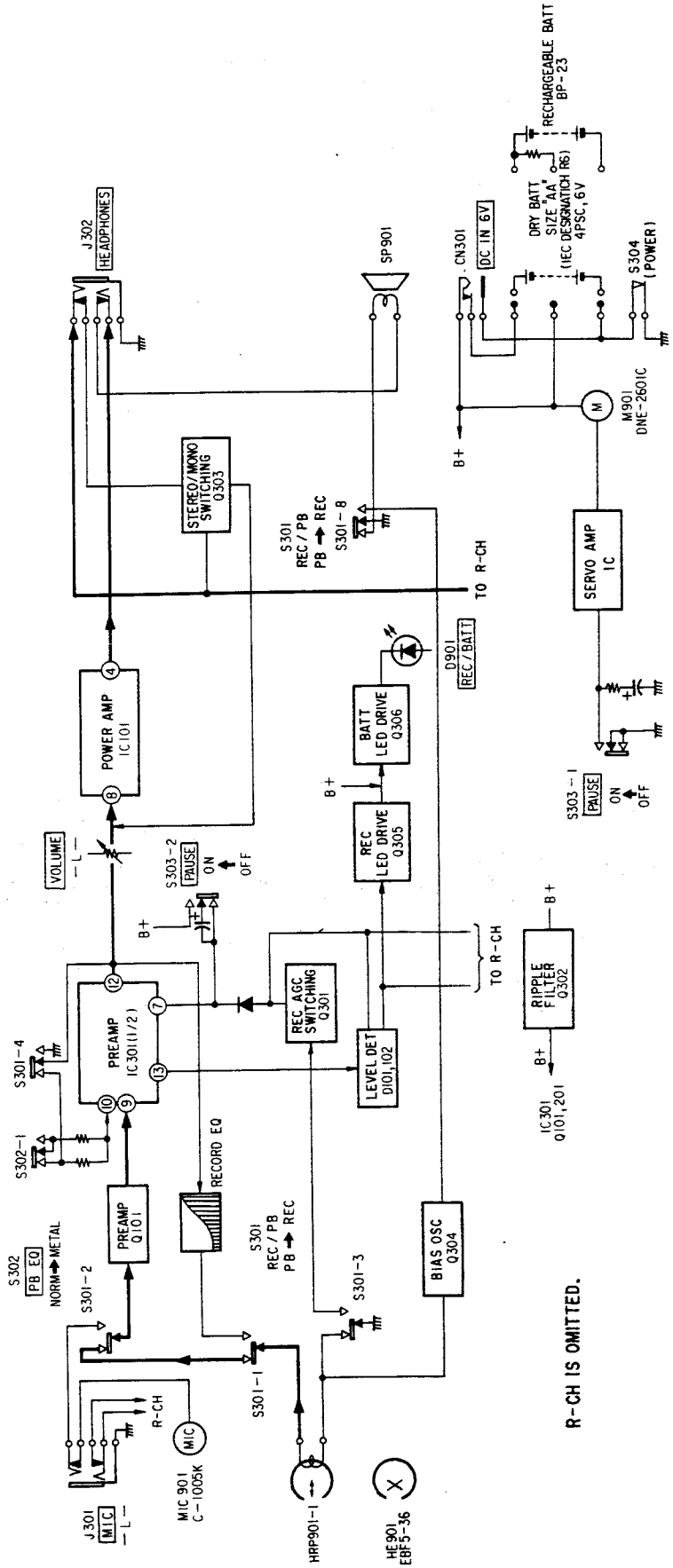
Accessories supplied: Demonstration tape cassette (1)
Stereo headphones (1)
Sony SUM-3(NS) New Super batteries (4) (US, Canadian, E model)
Connecting cord RK-128 (1)
Shoulder strap (1)

MICROFILM

SONY®
SERVICE MANUAL

SECTION 1
OUTLINE

1-1. BLOCK DIAGRAM



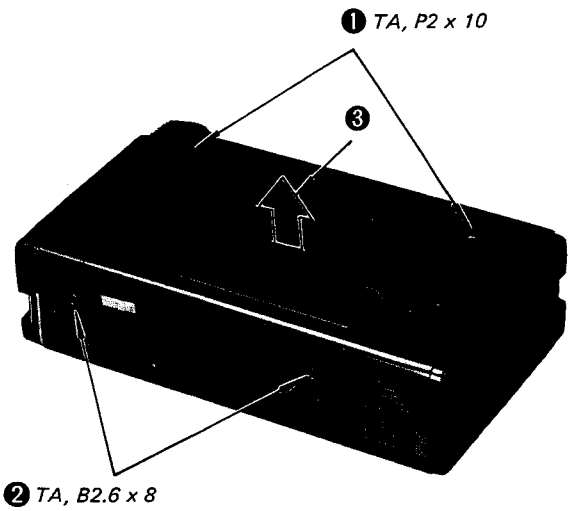
MEMO

SECTION 2
DISASSEMBLY

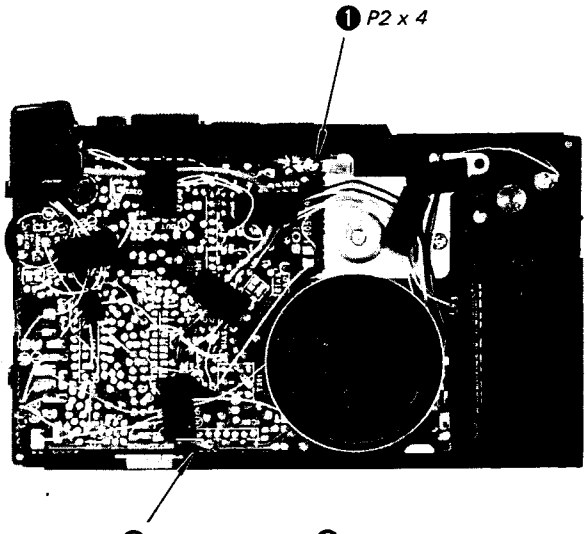
2-1. REMOVAL

Note: Follow the disassembly procedure in the numerical order given.

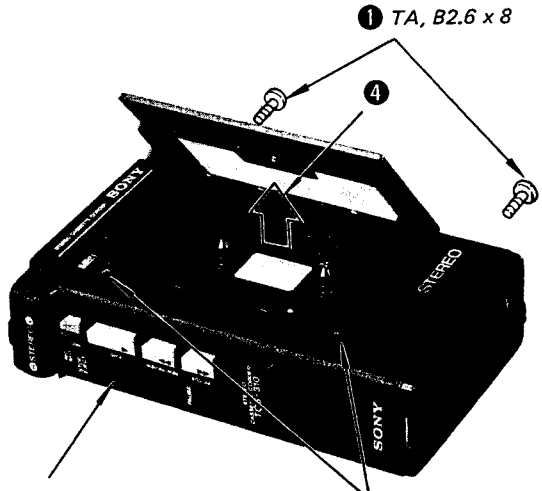
CABINET (B)



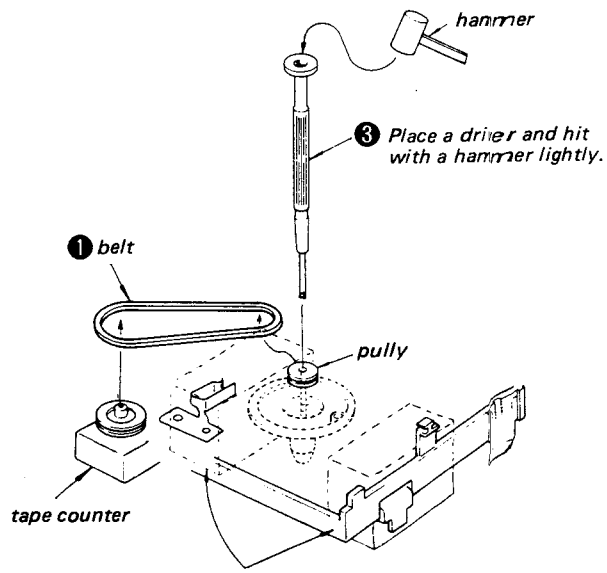
AUDIO BOARD



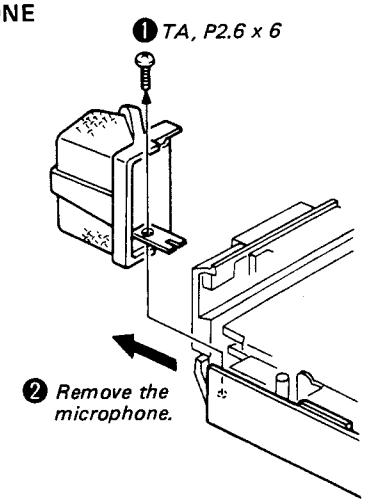
CABINET (A)



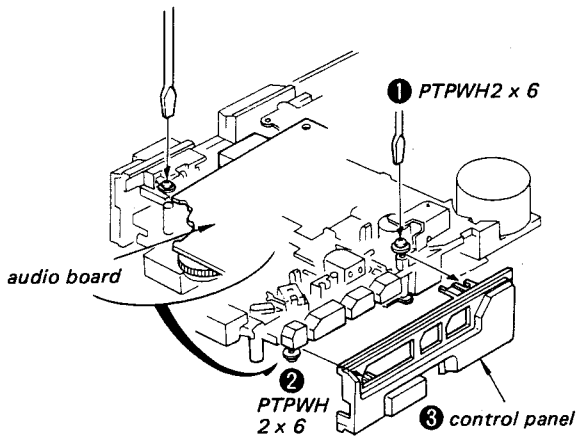
SUPPLY REEL SPINDLE



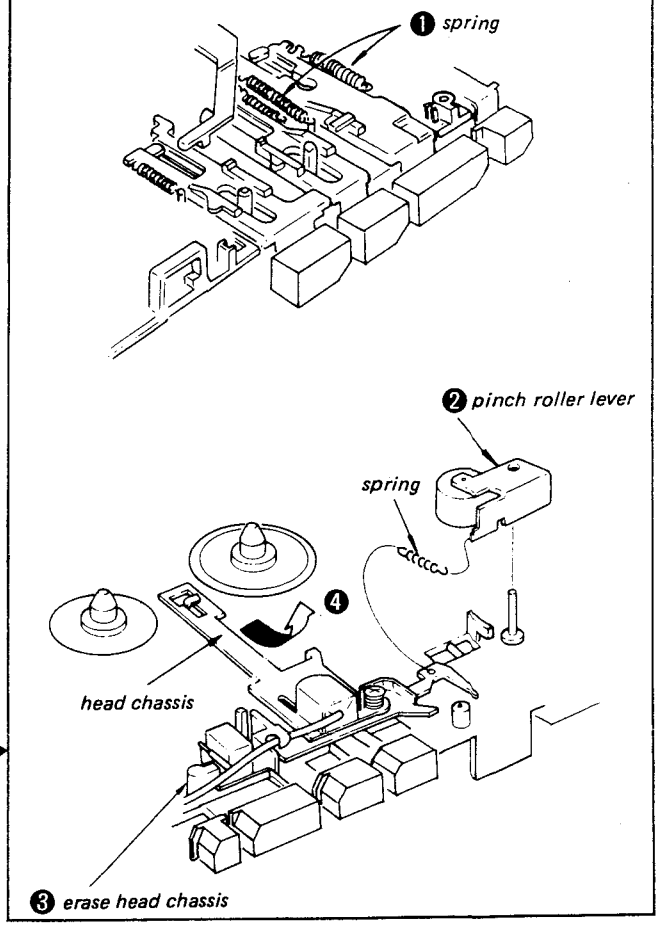
MICROPHONE



CONTROL PANEL

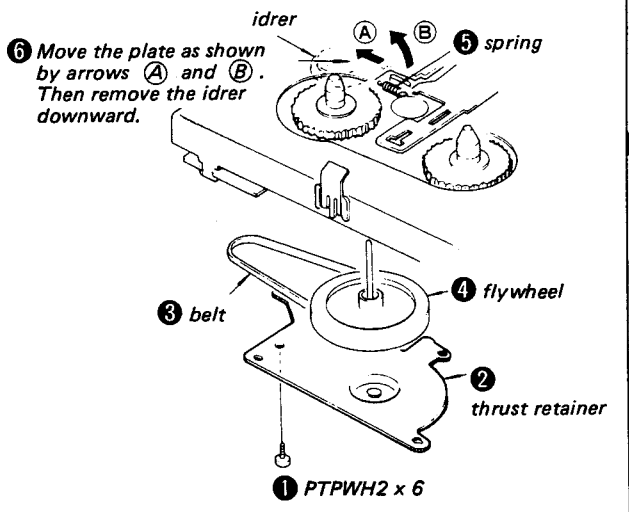


HEAD CHASSIS

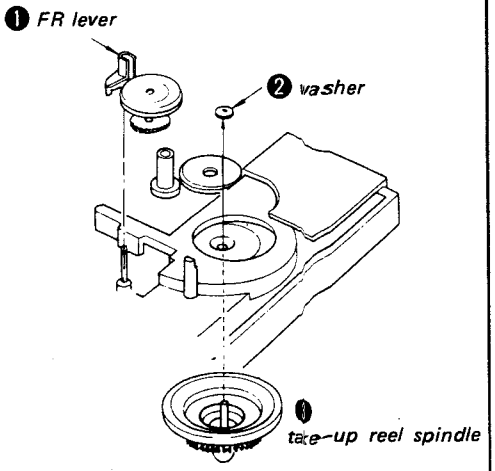


Remove the fly wheel.
Refer to the "IDLER".

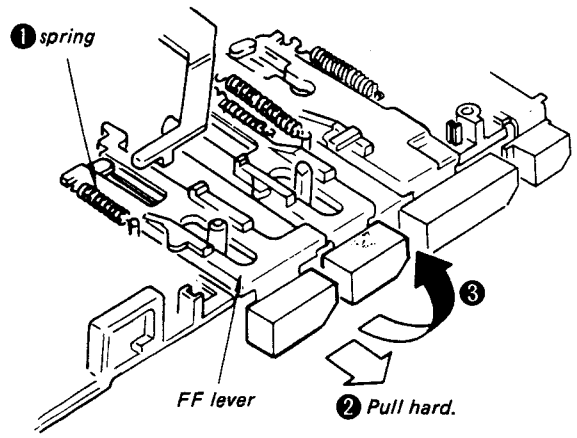
IDLER



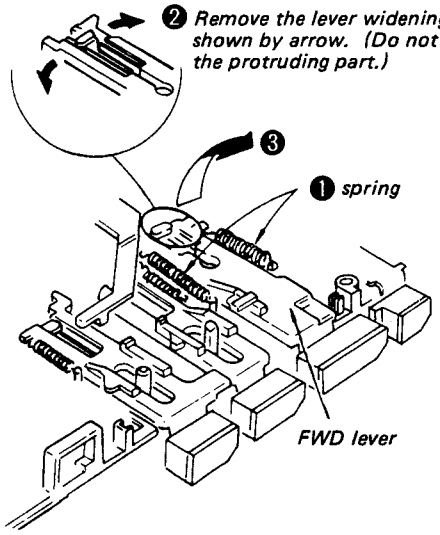
TAKE-UP REEL SPINDLE



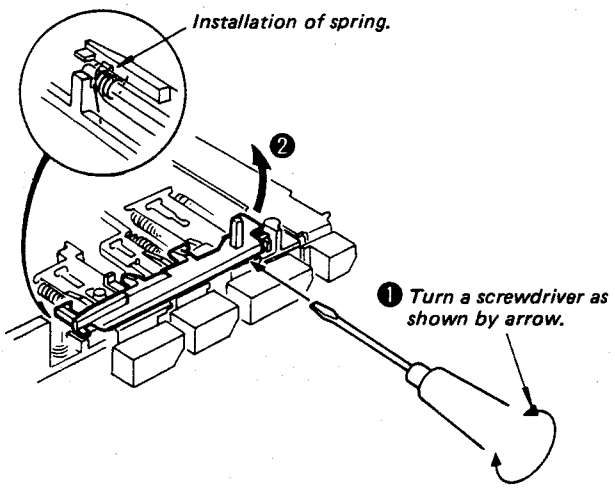
FF LEVER



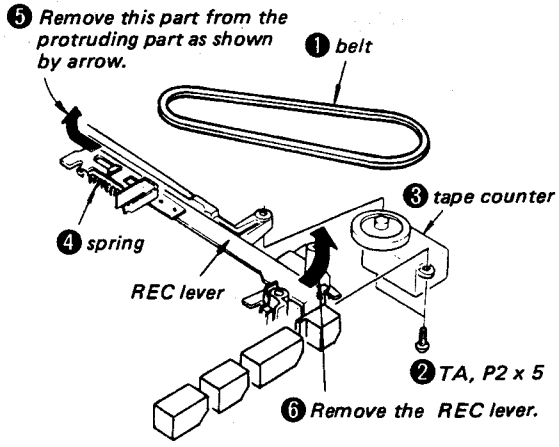
FWD LEVER



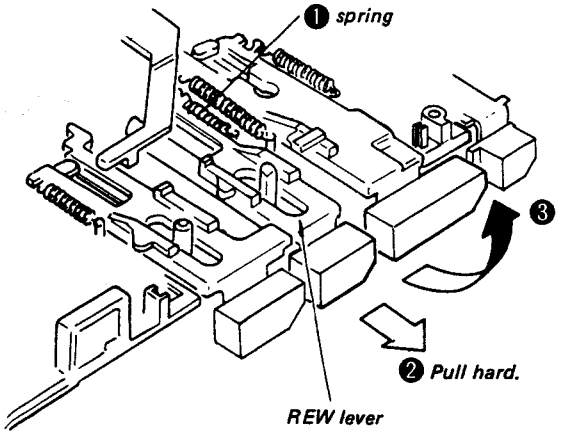
LOCK PLATE



REC LEVER


❺ Remove this part from the protruding part as shown by arrow.
❶ belt
❸ tape counter
❹ spring
REC lever
❷ TA, P2 x 5
❻ Remove the REC lever.

REW LEVER



SECTION 3
ADJUSTMENTS

3-1. MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:

   record/playback head — pinch roller
   erase head — rubber belts
   capstan — idlers

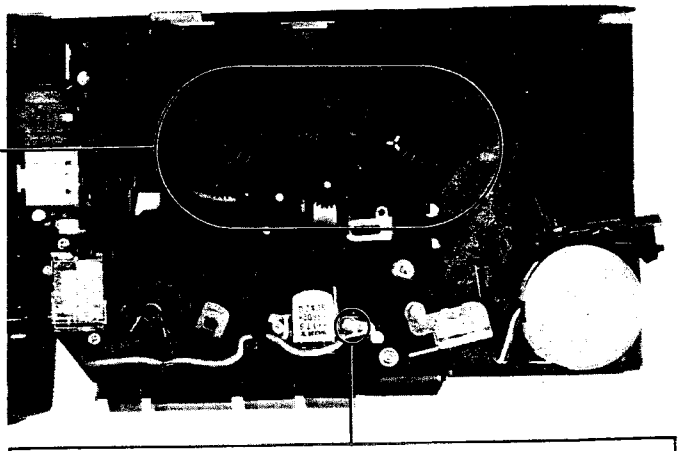
2. Demagnetize the record/playback head with a head demagnetizer. (Do not bring the head demagnetizer close to the erase head.)
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

Torque Measurement

Torque	Torque Meter	Meter Reading
Forward	CQ-102C	24–50 g·cm (0.33–0.7 oz·inch)
Back Tension		less than 4.5 g·cm (0.63 oz·inch)
Fast Forward and Rewind	CQ-201B	more than 70 g·cm (0.97 oz·inch)

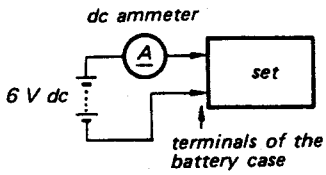
Tape Tension Measurement

Meter	Meter reading
CQ-403	more than 150 g (5.29 oz)

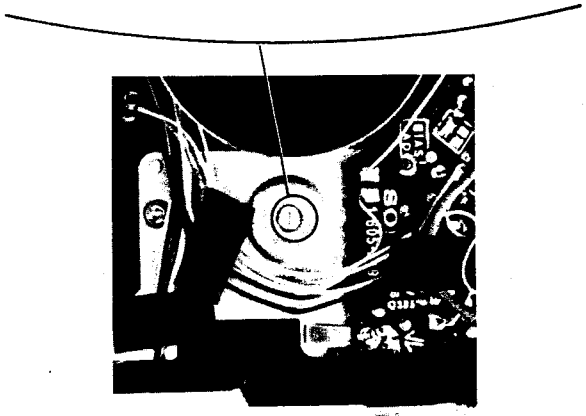


Flywheel Thrust Play Adjustment

— Playback Mode —

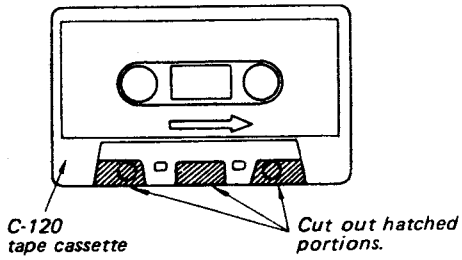


1. Turn the thrust screw counterclockwise until the screw tip leaves from the flywheel shaft.
2. Gradually turn the thrust screw clockwise to the position where the motor current suddenly increases.
3. Then, turn the thrust screw counterclockwise about ¼ turn from the position obtained in step 2.

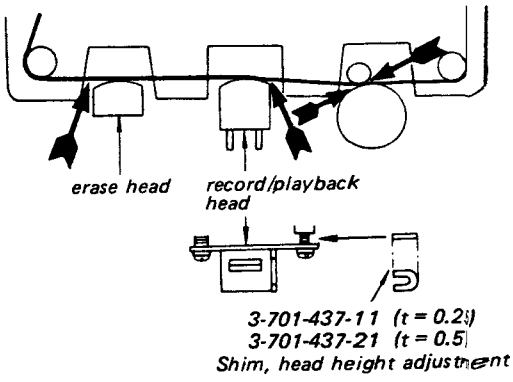


Head Height Adjustment

1. Prepare an adjustment cassette as shown below.



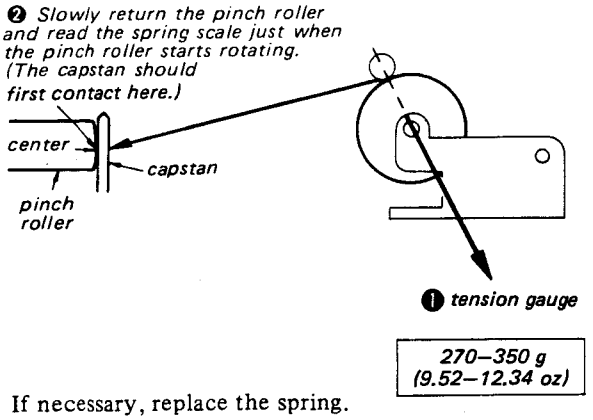
2. In record mode and viewing from the front, adjust the head heights to eliminate tape curl and tape twist at arrowed portions.



3-2. ELECTRICAL ADJUSTMENTS

Pinch Roller Pressure Adjustment

— Playback Mode —


❷ Slowly return the pinch roller and read the spring scale just when the pinch roller starts rotating. (The capstan should first contact here.)
center
capstan
pinch roller
❶ tension gauge
270–350 g (9.52–12.34 oz)

If necessary, replace the spring.

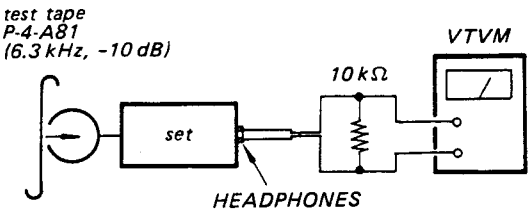
Record/playback Head Azimuth Adjustment

Setting:

VOLUME control: mechanical mid

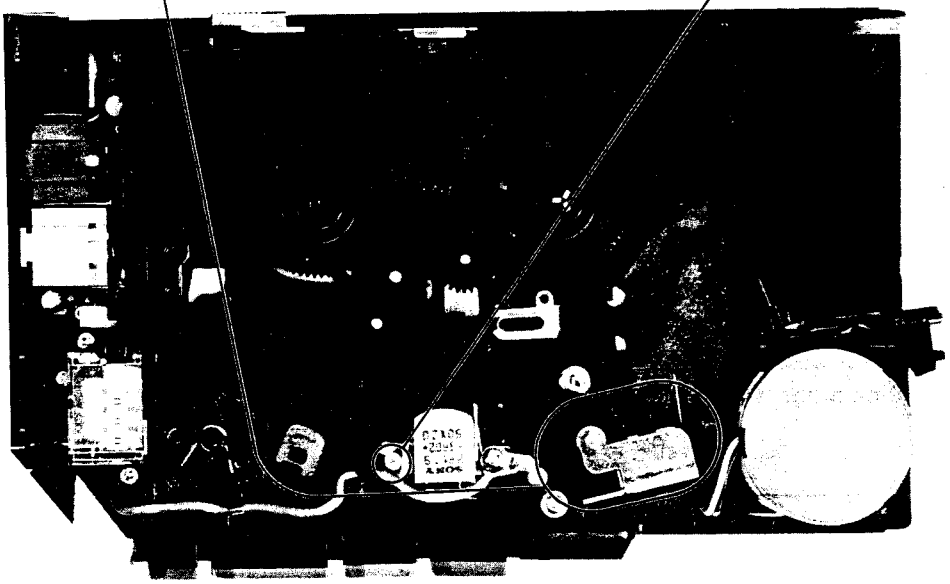
Procedure:

1. Mode: playback



2. Turn the adjustment screw for maximum VTVM reading.

Note: Several peaks may appear, but take the maximum.

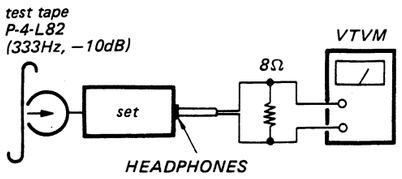


Playback Level Adjustment

Setting:

VOLUME: maximum

Procedure:



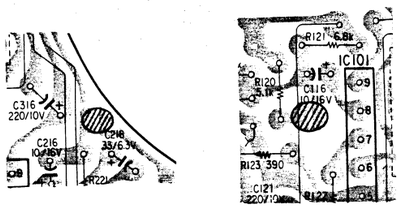
Specification:

Level difference between channels:
less than 3dB

1) If necessary, connect the patterns for higher level channel.
2) Comfirm that the output level of HEADPHONES is fixed when repeating playback and stop.

Adjustment Location:

−R-CH− −L-CH−

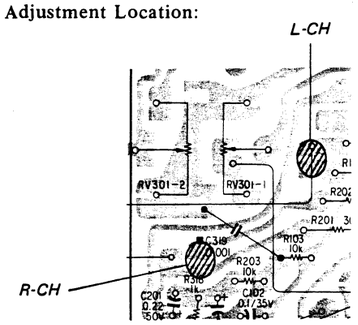


Microphone Sensitivity Adjustment

When replacing the microphone, perform this adjustment.

Mark of Microphone	Pattern Connection
BLACK	OPEN
RED	SHORT

Adjustment Location:



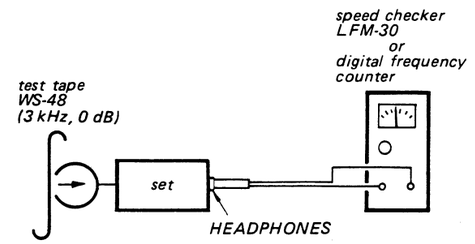
Tape Speed Adjustment

Setting:

VOLUME control: mechanical mid

Procedure:

Mode: playback



Specification:

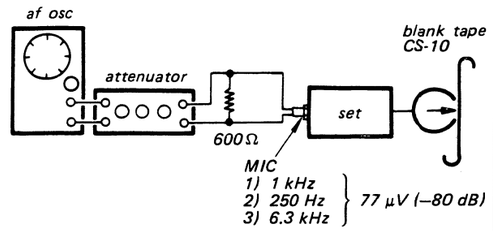
Speed checker	Digital frequency counter
± 2.5 %	3000 ± 75 Hz

Frequency difference between the beginning and the end of the tape should be within ±2 % (±60 Hz).

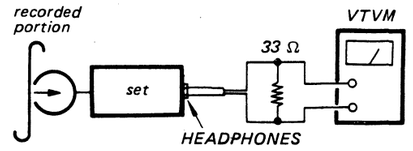
Record Bias Adjustment

Procedure:

1. Mode: record



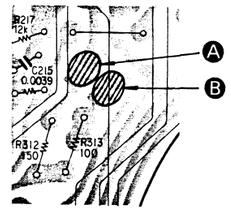
2. Mode: playback



1) Adjust VOLUME so that 1 kHz output level is 77 mV (−20 dB).
2) Comfirm that 250 Hz and 6.3 kHz output levels are 55 mV (−23 dB) – 110 mV (−17 dB).
3) If necessary, change the pattern connection and repeat steps 1), 2).

Pattern Connection	VTVM Reading (6.3 kHz)
Ⓐ	up ↕ down
Ⓑ	
Ⓐ Ⓑ	

Adjustment Location:

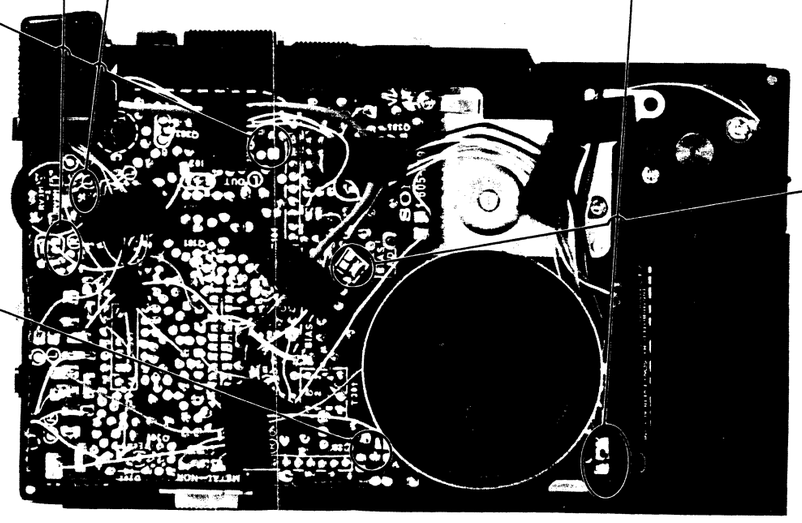


R-CH L-CH

L-CH

R-CH

RV

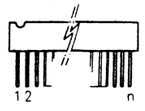


SECTION 4
DIAGRAMS

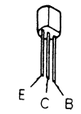
4-1. MOUNTING DIAGRAM

Semiconductor Lead Layouts

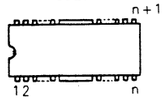
BA526



2SC1364

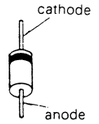


TA7658P



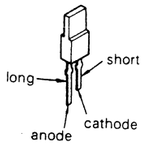
(Top view)

1T22
1T22AM
1S1555

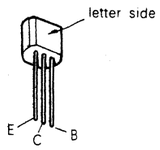


2SC2458

GL-9PR10

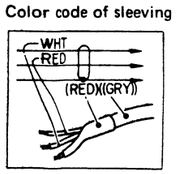


2SC2785

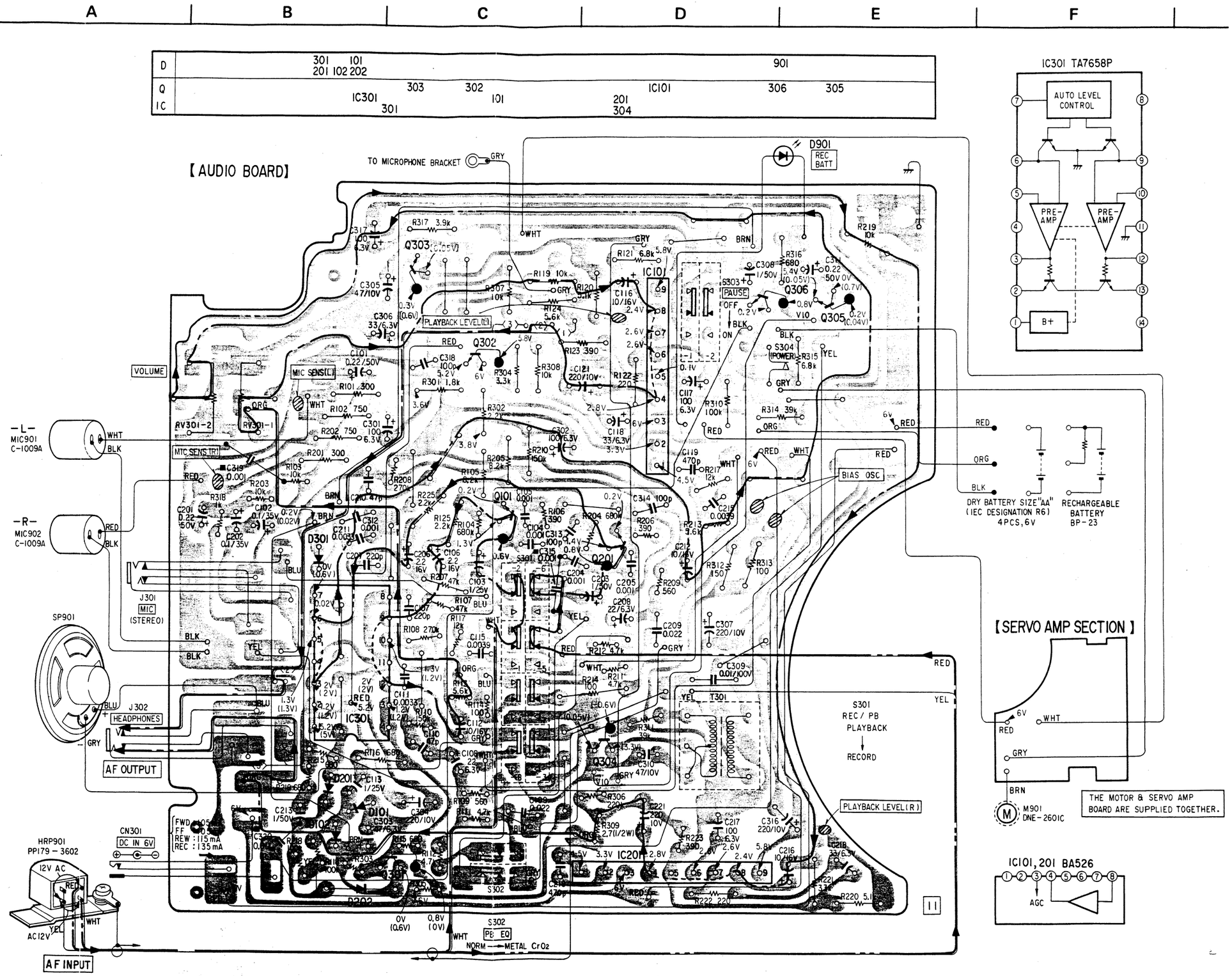


Note:

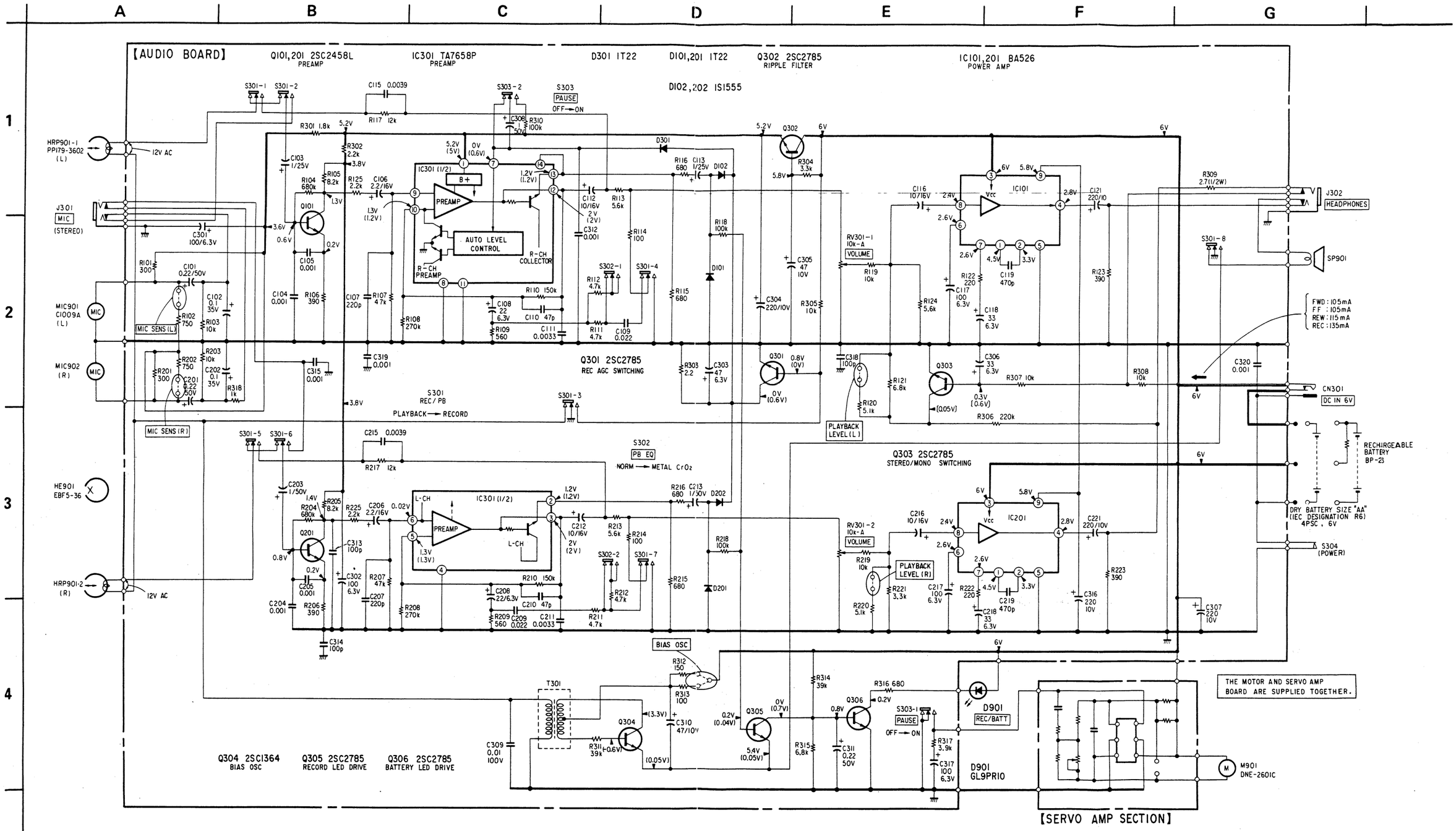
- Color code of sleeving over the end of the jacket.



- ■ : part mounted on the conductor side.
- ▒ : B + pattern
- ▬▶▬ : signal path
- ▬▪▬▶ : L-CH signal path
- ▬▪▬▶ : R-CH signal path



4-2. SCHEMATIC DIAGRAM



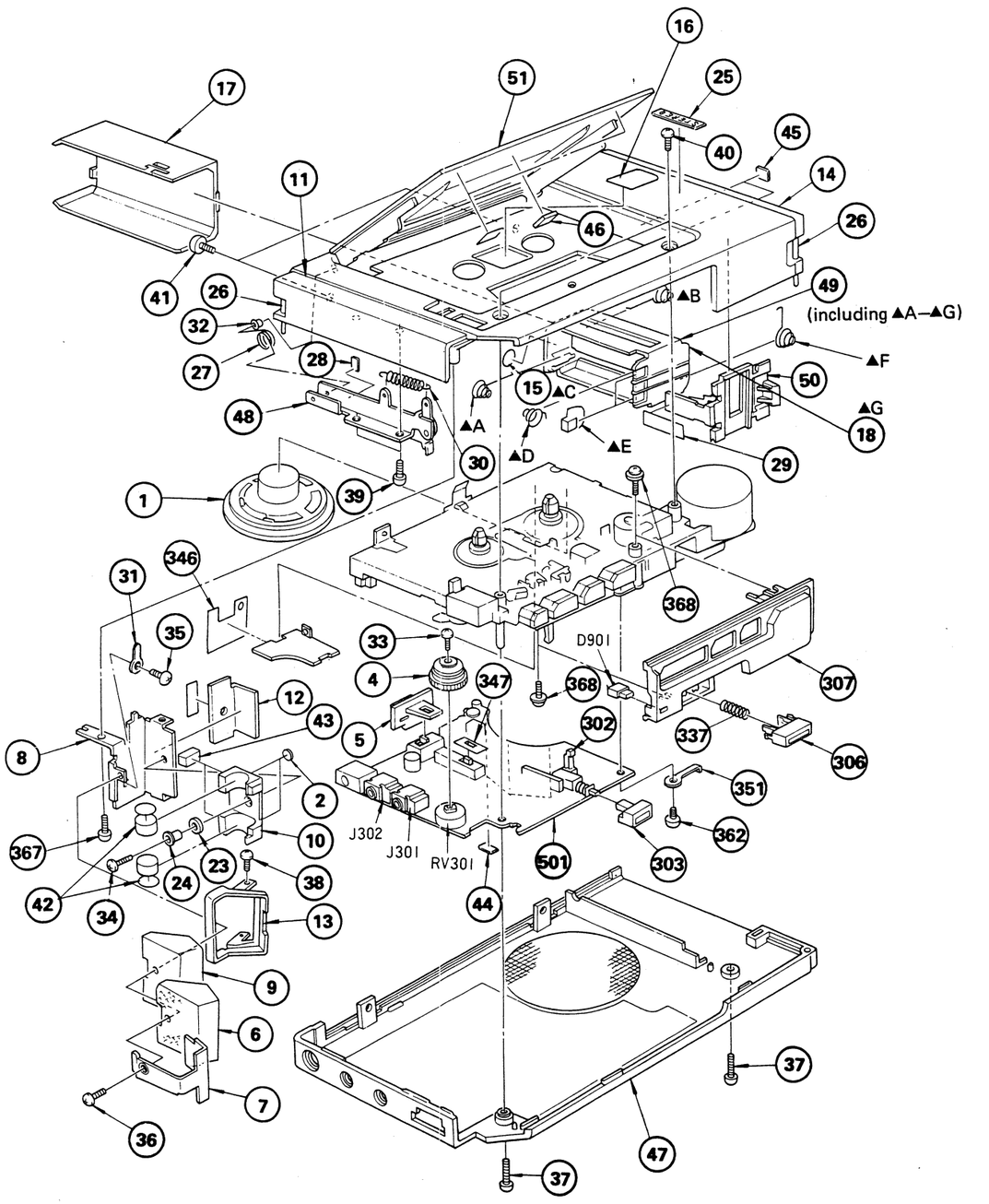
Note: Voltages are measured with a VOM (50kΩ/V).

- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/8W unless otherwise noted. kΩ : 1000Ω, MΩ : 1000kΩ
- ▭ : panel designation.
- ▭ : adjustment for repair.
- ——: B+ bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal (detuned) conditions.
  ( ) : Record
  [ ] : Connected Headphones
- Voltage variations may be noted due to normal production tolerances.
- Total current is measured with no cassete installed.

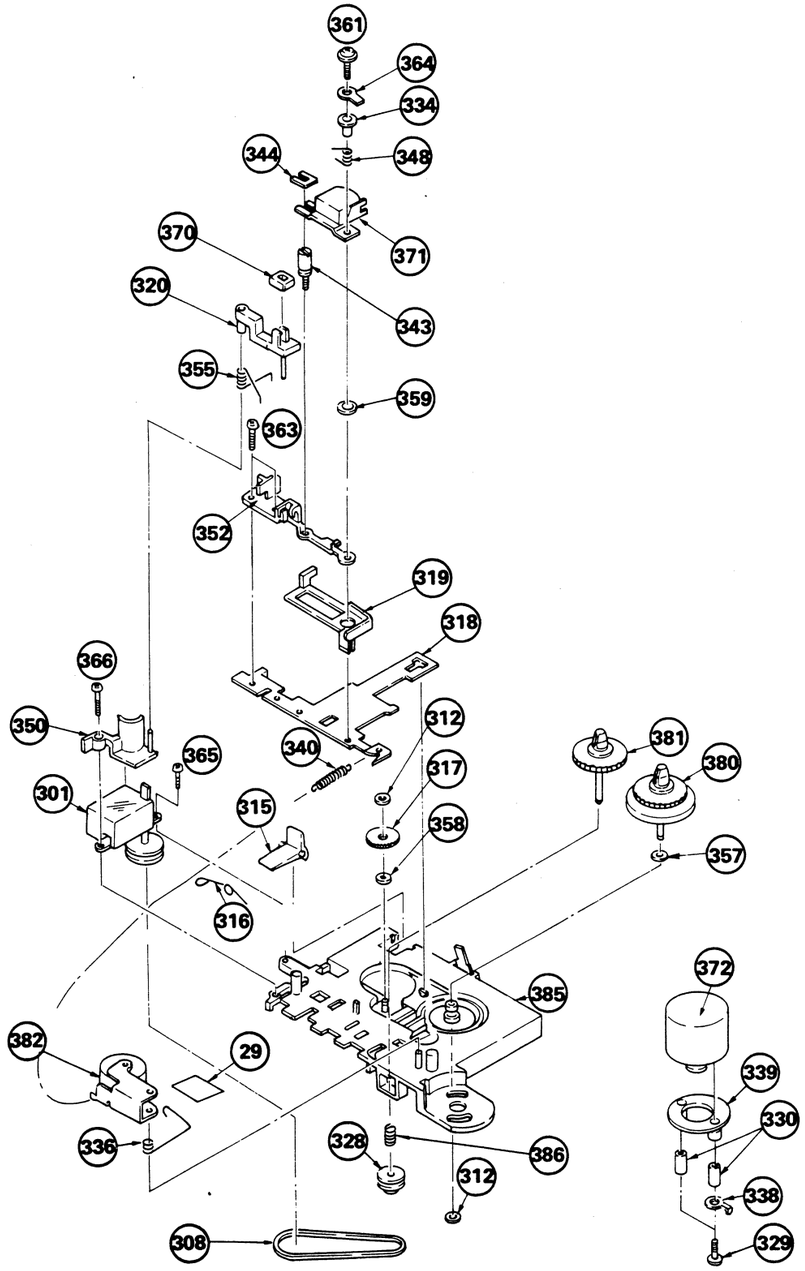
SECTION 5

EXPLODED VIEWS AND PARTS LIST

5-1.

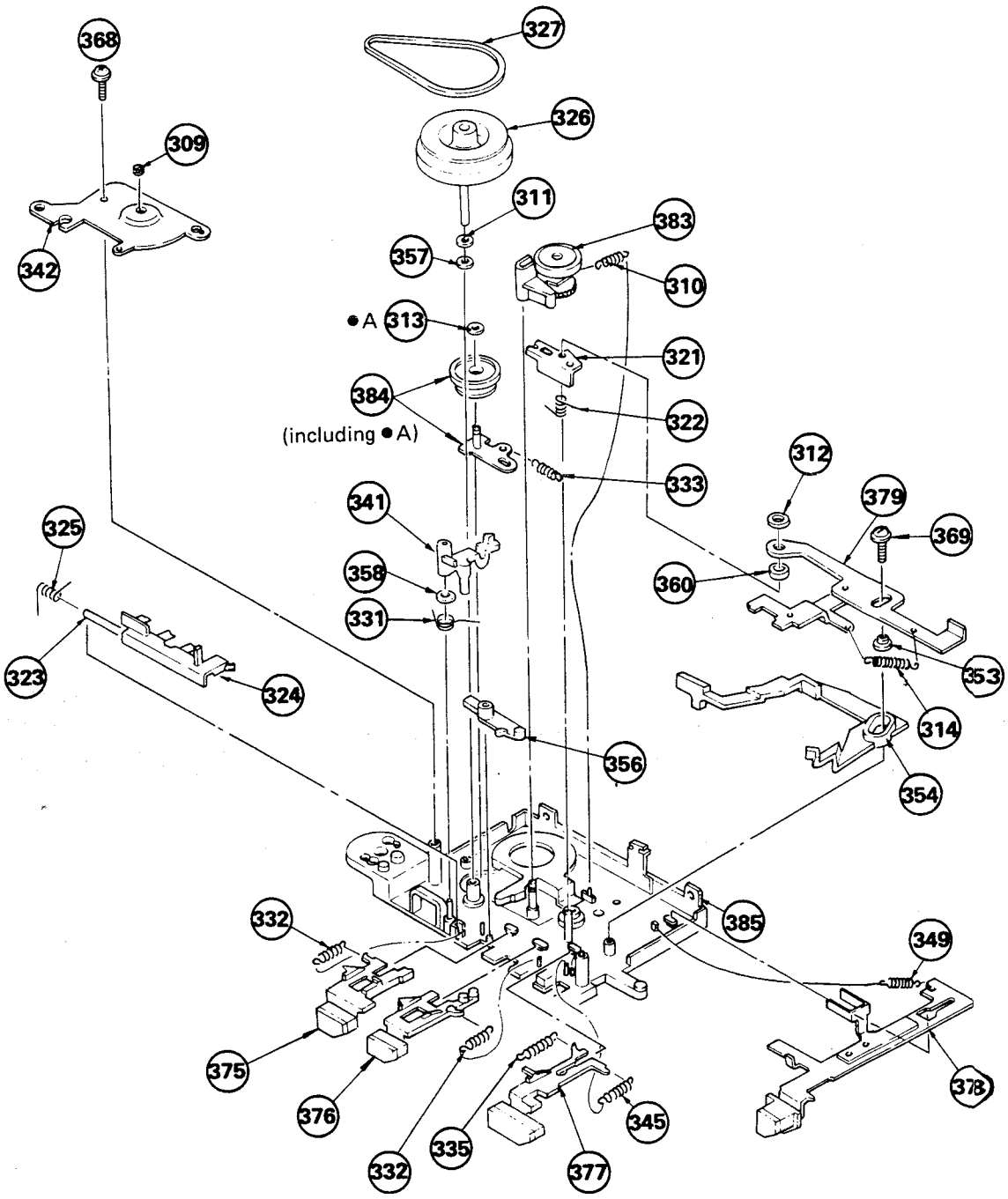


5-2.



A	B	C

5-3.


368
309
342
327
326
311
383
357
310
●A 313
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384
322
(including ●A)
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GENERAL SECTION

No.	Part No.	Description
1	1-502-810-00	SPEAKER (5CM)
2	3-570-937-00	CUSHION (C), MOTOR
3	.....	
4	3-301-002-00	KNOB, CONTROL
5	3-301-003-00	KNOB, TONE
6	3-301-004-00	SCREEN
7	3-301-005-00	PLATE, ORNAMENTAL, MICROPHONE
8 ♦	3-301-006-00	BRACKET, MICROPHONE
9 ♦	3-301-007-00	SCREEN, WINDOW
10 ♦	3-301-008-00	HOLDER, MICROPHONE
11 ♦	3-301-009-00	STRIP, ORNAMENTAL, CABINET
12 ♦	3-301-010-00	SEAL, MICROPHONE
13	3-301-012-00	RING, MICROPHONE
14	3-301-013-00	CABINET (A)
15	3-527-126-00	MARK, BATTERY CASE
16	3-556-221-00	PLATE, ORNAMENTAL
17	3-564-890-00	CASE, BATTERY
18 ♦	3-564-975-00	HOLDER, BATTERY
19	.....	
20	.....	
21	.....	
22	.....	
23	3-570-770-00	CUSHION (A), MOTOR
24	3-570-772-00	SPACER (M)
25 ♦	3-572-809-00	EMBLEM, STEREO
26	3-572-816-00	SHAFT (B), STRAP
27	3-572-829-00	SPRING
28 ♦	3-572-862-00	SPACER
29	3-831-441-XX	CUSHION
30	4-858-478-00	SPRING, TENSION
31	7-623-505-01	LUG, 2
32	7-623-612-01	EYELET, 1.5X4
33	7-627-552-48	SCREW, PRECISION +P 1.7X4
34	7-627-552-57	SCREW, PRECISION +P 1.7X5
35	7-627-553-17	SCREW, PRECISION +P 2X2
36	7-627-553-38	SCREW, PRECISION +P 2X3
37	7-685-106-19	SCREW +P 2X10 TYPE2 NON-SLIT
38	7-685-133-11	SCREW +P 2.6X6 TYPE2 SLIT
39	7-685-134-21	SCREW +P 2.6X8 TYPE2 SLIT
40	7-685-533-19	SCREW +BTP 2.6X6 TYPE2 N-S
41	7-685-534-29	SCREW +BTP 2.6X8 TYPE2 N-S
42	8-814-187-00	MICROPHONE, BUILT-IN (C-1009A)
43	9-911-815-01	CUSHION
44	9-911-838-XX	CUSHION, METER
45	9-911-845-XX	CUSHION

GENERAL SECTION

No.	Part No.	Description
46	9-911-850-XX	CUSHION
47	A-3040-345-A	CABINET (B) ASSY
48 ♦	X-3301-001-0	LEVER ASSY, LIFT
49	X-3564-820-0	HOLDER ASSY, BATTERY
50	X-3572-804-0	HOLDER ASSY, CONTACT
51	X-3301-005-0	LID ASSY, CASSETTE

ACCESSORY & PACKING MATERIAL

Part No.	Description
1-555-810-00	CORD, CONNECTION (RK-128)
3-301-025-11	CUSHION
3-301-031-00	INDIVIDUAL CARTON
3-527-213-00	(Canadian,UK,AEP,E)..LABEL, SERIAL NUMBER
3-568-739-03	CUSHION (UPPER)
3-570-631-71	BAG, POLYETHYLENE (FOR SET)
3-572-854-00	BELT, SHOULDER
3-701-624-00	BAG, POLYETHYLENE (FOR SHEETS)
3-701-690-00	(UK).....LABEL, MADE IN JAPAN
♦ 3-701-992-01	(E).....LABEL, EP
3-701-999-00	(US).....LABEL, SERIAL NUMBER
♦ 3-703-159-00	(US).....LABEL, DESTINATION
♦ 3-703-162-00	(Canadian).....LABEL, DESTINATION
♦ 3-703-166-00	(UK).....LABEL, DESTINATION
♦ 3-703-172-00	(AEP).....LABEL, DESTINATION
♦ 3-701-363-00	(E).....LABEL, DESTINATION
3-783-624-11	(UK,AEP).....MANUAL, INSTRUCTION
3-783-624-21	(US).....MANUAL, INSTRUCTION
3-783-624-51	(Canadian,E)...MANUAL, INSTRUCTION
3-785-624-01	(AEP)...PRICE CARD
3-793-828-11	QUESTIONNAIRE
3-795-203-10	(AEP)...INSTRUCTION, DUTCH & SWEDISH
3-795-244-11	CARD, WARRANTY, INTERNATIONAL
8-893-527-00	TAPE, DEMO (CD-814)
- - -	MDR-1L1 SET
- - -	(US,Canadian,E)...BATTERY, NEW SUPER (SUM-3)(NS)

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:
- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS
- MMH : mH, UH : μH

MECHANIAM SECTION

No.	Part No.	Description
301	1-548-535-11	COUNTER, TAPE
302	1-552-864-00	SWITCH, LEAF
303	3-301-011-00	BUTTON, PAUSE
304	.....	
305	.....	
306	3-301-020-00	BUTTON, STOP
307	3-301-021-00	PANEL, CONTROL
308	3-480-136-00	BELT
309	3-527-140-00	SCREW, THRUST
310	3-531-794-00	SPRING, TENSION
311	3-545-715-00	WASHER
312	3-558-708-01	WASHER, STOPPER
313	3-558-708-11	WASHER, STOPPER
314	3-561-626-00	SPRING, TENSION
315	3-564-806-00	LEVER, ERASING PROTECTION
316	3-564-807-00	SPRING
317	3-564-837-00	GEAR, REW
318	3-564-838-11	CHASSIS, HEAD
319	3-564-840-00	LEVER, DETECTION
320	3-564-843-00	LEVER, ERASE HEAD
321	3-564-854-00	HOOK, SPRING. F.R
322	3-564-855-00	SPRING
323 ♣;	3-564-857-00	SHAFT, LOCK PLATE
324	3-564-858-00	PLATE, LOCK
325	3-564-859-00	SPRING
326	3-564-865-03	FLYWHEEL
327	3-564-866-00	BELT
328	3-564-891-00	PULLEY, COUNTER
329	3-564-899-00	SCREW
330	3-564-903-00	COLLAR (M)
331	3-564-910-00	SPRING
332	3-564-913-00	SPRING, TENSION
333	3-564-932-00	SPRING, TENSION
334	3-564-933-00	BOSS, FITTING, SPRING
335	3-564-935-00	SPRING, TENSION
336	3-564-942-00	SPRING
337	3-564-951-00	SPRING, COMPRESSION
338 ♣;	3-564-952-00	PLATE, GROUND, MOTOR
339	3-564-953-00	CUSHION, MOTOR
340	3-564-955-00	SPRING, TENSION
341	3-564-980-00	LEVER, SHUT-OFF
342 ♣;	3-565-905-00	RETAINER, THRUST
343	3-565-915-00	SCREW, ADJUSTMENT
344 ♣;	3-565-916-00	SPRING
345	3-565-927-00	SPRING, TENSION

MECHANISM SECTION

No.	Part No.	Description
346	3-565-934-00	PIECE, CONTACT, GROUND
347 ♣;	3-565-935-00	COVER, SWITCH
348	3-565-938-00	SPRING
349	3-572-803-00	SPRING, TENSION
350	3-572-837-00	TABLE, HEAD, E
351	3-572-838-00	PLATE, GROUND
352 ♣;	3-572-840-00	TABLE, HEAD
353	3-572-845-00	COLLAR
354	3-572-848-00	LEVER, EJECT
355	3-572-851-00	SPRING
356	3-572-867-00	LEVER (S), C.R
357	3-701-437-01	WASHER
358	3-701-437-11	WASHER
359	3-701-437-21	WASHER
360	3-884-207-00	COLLOR
361	7-621-255-55	SCREW +P 2X8
362	7-621-255-25	SCREW +P 2X4
363	7-621-281-15	SCREW +P 2X2
364	7-623-505-01	LUG, 2
365	7-685-103-11	SCREW +P 2X5 TYPE2 NON-SLIT
366	7-685-106-11	SCREW +P 2X10 TYPE2 NON-SLIT
367	.....	
368	7-687-204-11	TOTSU PTPWH 2X6 NON-SLIT, TYPE2
369	7-687-205-11	TOTSU PTPWH2X8, TYPE2, NON-SLIT
370	8-658-096-02	HEAD, ERASE EBF5-36
371	8-829-372-01	HEAD (PP179-3602)(HRP901)
372	8-835-028-11	MOTOR, DC (DNE-2601C)
373	.....	
374	.....	
375	A-3164-218-A	LEVER ASSY, FF
376	A-3164-219-A	LEVER ASSY, REW
377	A-3164-216-A	LEVER ASSY, FWD
378	A-3164-217-A	LEVER ASSY, REC
379 ♣;	X-3301-002-0	LEVER ASSY, JOINT, EJECT
380	X-3564-802-0	TABLE ASSY, REEL, T SIDE
381	X-3564-803-0	TABLE ASSY, REEL, S SIDE
382	X-3564-805-0	PINCH LEVER ASSY
383	X-3564-806-0	LEVER ASSY, FR
384	X-3564-807-0	BRACKET ASSY, IDLER
385 ♣;	X-3564-821-0	CHASSIS ASSY
386	3-578-124-00	SPRING, COMPRESSION

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- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS
- MMH : mH, UH : μH

ELECTRICAL PARTS

Ref.No.	Part No.	Description
501	♦;A-3068-059-A	MOUNTED PCB, AUDIO
CN301	1-507-749-00	JACK, EXTENTION POWER
D101	8-719-422-21	DIODE 1T22AM
D102	8-719-815-55	DIODE 1S1555
D201	8-719-422-21	DIODE 1T22AM
D202	8-719-815-55	DIODE 1S1555
D301	8-719-422-21	DIODE 1T22AM
D901	8-719-909-10	DIODE GL-9PR10
HRP901	8-829-372-01	HEAD (PP179-3602)
IC101	8-759-952-60	IC BA526
IC201	8-759-952-60	IC BA526
IC301	8-759-276-58	IC TA7658P
J301	1-507-688-31	JACK (STEREO PLUG)
J302	1-507-688-00	JACK (STEREO PLUG)
Q101	8-729-245-83	TRANSISTOR 2SC2458
Q201	8-729-245-83	TRANSISTOR 2SC2458
Q301	8-729-178-54	TRANSISTOR 2SC2785
Q302	8-729-178-54	TRANSISTOR 2SC2785
Q303	8-729-178-54	TRANSISTOR 2SC2785
Q304	8-729-663-47	TRANSISTOR 2SC1364
Q305	8-729-178-54	TRANSISTOR 2SC2785
Q306	8-729-178-54	TRANSISTOR 2SC2785
R303	1-211-697-00	CARBON 2.2M 10% 1/16W
R309	1-247-185-00	CARBON 2.7 5% 1/2W F
RV301	1-228-169-00	RES, VAR, CARBON 10K/10K
S301	1-552-865-00	SWITCH, SLIDE
S302	1-552-849-00	SWITCH, SLIDE
S303	1-553-331-00	SWITCH, PUSH
T301	1-433-206-00	TRANSFORMER, BIAS OSCILLATOR

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COILS
- MMH : mH, UH : μH

ELECTROLYTIC CAPACITORS

CAP. (μF)	RATING → : Use the high voltage rated one.					
	6.3 VOLT.	10 VOLT.	16 VOLT.	25 VOLT.	35 VOLT.	50 VOLT.
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
0.47					→	1-121-726-00
1.0					→	1-121-391-00
2.2					→	1-121-450-00
3.3	→	→	→	1-121-392-00	→	1-121-393-00
4.7	→	→	→	1-121-395-00	→	1-121-396-00
10	→	→	1-121-651-00	1-121-398-00	→	1-121-738-00
22	→	→	1-121-479-00	1-121-480-00	1-121-662-00	1-121-152-00
33	→	→	1-121-403-00	1-121-404-00	1-121-652-00	1-121-405-00
47	→	1-121-352-00	1-121-409-00	1-121-410-00	1-121-653-00	1-121-411-00
100	→	1-121-414-00	1-121-415-00	1-121-416-00	1-121-357-00	1-121-417-00
220	1-121-419-00	1-121-420-00	1-121-421-00	1-121-422-00	1-121-261-00	1-121-423-00
330	1-121-751-00	1-121-805-00	1-121-521-00	1-121-654-00	1-121-655-00	1-121-656-00
470	1-121-424-00	1-121-425-00	1-121-426-00	1-121-733-00	1-121-361-00	1-121-810-00
1000	–	1-121-736-00	1-121-245-00	1-121-657-00	1-121-388-00	1-123-061-00
2200	1-121-658-00	1-121-659-00	1-121-660-00	1-123-067-00	1-121-984-00	–
3300	1-121-661-00	1-123-075-00	1-123-071-00	–	–	–

CAP. (μF)	100 VOLT.	160 VOLT.	250 VOLT.	350 VOLT.
	PART No.	PART No.	PART No.	PART No.
0.47	–	–	–	–
1.0	1-123-249-00	1-123-252-00	1-123-003-00	1-121-168-00
2.2	1-123-250-00	1-123-026-00	–	1-123-028-00
3.3	1-121-995-00	–	1-123-004-00	1-123-006-00
4.7	1-123-255-00	1-121-246-00	1-121-759-00	1-123-007-00
10	1-121-126-00	1-121-999-00	1-123-254-00	1-123-008-00
22	1-121-996-00	1-123-253-00	1-123-005-00	1-123-022-00
33	1-121-997-00	1-121-757-00	–	–
47	1-123-251-00	1-121-919-00	–	–
100	1-123-084-00	–	–	–

CERAMIC CAPACITORS

CAP. (pF)	RATING 50 VOLT. PART No.	CAP. (pF)	50 VOLT. PART No.	CAP. (pF)	50 VOLT. PART No.	CAP. (μF)	50 VOLT. PART No.
0.5	1-101-837-00	22	1-102-959-00	150	1-101-361-00	0.001	1-102-074-00
0.75	1-101-586-00	24	1-102-960-00	160	1-101-367-00	0.0012	1-102-118-00
1.0	1-102-934-00	27	1-102-961-00	180	1-102-976-00	0.0015	1-102-119-00
1.5	1-101-576-00	30	1-102-962-00	200	1-102-977-00	0.0018	1-102-120-00
2.0	1-102-935-00	33	1-102-963-00	220	1-102-978-00	0.0022	1-102-121-00
3	1-102-936-00	36	1-102-964-00	240	1-102-979-00	0.0027	1-102-122-00
4	1-102-937-00	39	1-102-965-00	270	1-102-980-00	0.0033	1-102-123-00
5	1-102-942-00	43	1-102-966-00	300	1-102-981-00	0.0039	1-102-124-00
6	1-102-943-00	47	1-101-880-00	330	1-102-820-00	0.0047	1-102-125-00
7	1-102-944-00	51	1-101-882-00	360	1-102-821-00	0.0056	1-102-126-00
8	1-102-945-00	56	1-101-884-00	390	1-102-822-00	0.0068	1-102-127-00
9	1-102-946-00	62	1-101-886-00	430	1-102-823-00	0.0082	1-102-128-00
10	1-102-947-00	68	1-101-888-00	470	1-102-824-00	0.01	1-102-129-00
11	1-102-948-00	75	1-101-890-00	510	1-101-059-00	0.022	1-101-005-00
12	1-102-949-00	82	1-102-971-00	560	1-102-115-00	0.047	1-101-006-00
13	1-102-950-00	91	1-102-972-00	680	1-102-116-00		
15	1-102-951-00	100	1-102-973-00	820	1-102-117-00		
16	1-102-952-00	110	1-102-815-00				
18	1-102-953-00	120	1-102-816-00				
20	1-102-958-00	130	1-101-081-00				

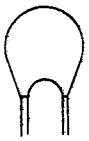
0.001μF = 1,000pF

CERAMIC (SEMICONDUCTOR) CAPACITORS

CAP. (μF)	RATING → : Use the high voltage rated one. 25 VOLT. PART No.	50 VOLT. PART No.	CAP. (μF)	25 VOLT. PART No.	50 VOLT. PART No.
0.001	→	1-161-039-00	0.018	1-161-016-00	1-161-054-00
0.0012	→	1-161-040-00	0.022	1-161-017-00	1-161-055-00
0.0015		1-161-041-00	0.027	1-161-018-00	1-161-056-00
0.0018		1-161-042-00	0.033	1-161-019-00	1-161-057-00
0.0022		1-161-043-00	0.039	1-161-010-00	1-161-058-00
0.0027	→	1-161-044-00	0.047	1-161-021-00	1-161-059-00
0.0033	→	1-161-045-00	0.056	→	1-161-060-00
0.0039	→	1-161-046-00	0.068	→	1-161-061-00
0.0047	→	1-161-047-00	0.082	1-161-024-00	1-161-062-00
0.0056	→	1-161-048-00	0.1	1-161-025-00	1-161-063-00
0.0068	→	1-161-049-00			
0.0082	1-161-012-00	1-161-050-00			
0.01	1-161-013-00	1-161-051-00			
0.012	→	1-161-052-00			
0.015	1-161-015-00	1-161-053-00			

MYLAR CAPACITORS

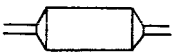
CAP. (μF)	RATING 50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.	CAP. (μF)	50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.	CAP. (μF)	50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.
0.001	1-108-227-00	1-108-365-00	1-108-409-00	0.01	1-108-239-00	1-108-377-00	1-108-421-00	0.1	1-108-251-00	1-108-389-00	1-108-433-00
0.0012	1-108-351-00	1-108-366-00	1-108-410-00	0.012	1-108-357-00	1-108-378-00	1-108-422-00	0.12	1-108-363-00	1-108-390-00	1-108-434-00
0.0015	1-108-228-00	1-108-367-00	1-108-411-00	0.015	1-108-240-00	1-108-379-00	1-108-423-00	0.15	1-108-252-00	1-108-391-00	1-108-435-00
0.0018	1-108-352-00	1-108-368-00	1-108-412-00	0.018	1-108-358-00	1-108-380-00	1-108-424-00	0.18	1-108-364-00	1-108-392-00	1-108-436-00
0.0022	1-108-230-00	1-108-369-00	1-108-413-00	0.022	1-108-242-00	1-108-381-00	1-108-425-00	0.22	1-108-254-00	1-108-393-00	1-108-437-00
0.0027	1-108-353-00	1-108-370-00	1-108-414-00	0.027	1-108-359-00	1-108-382-00	1-108-426-00	0.27	1-108-854-00	–	–
0.0033	1-108-232-00	1-108-371-00	1-108-415-00	0.033	1-108-244-00	1-108-383-00	1-108-427-00	0.33	1-108-855-00	–	–
0.0039	1-108-354-00	1-108-372-00	1-108-416-00	0.039	1-108-360-00	1-108-384-00	1-108-428-00	0.39	1-108-856-00	–	–
0.0047	1-108-234-00	1-108-373-00	1-108-417-00	0.047	1-108-246-00	1-108-385-00	1-108-429-00	0.47	1-108-857-00	–	–
0.0056	1-108-355-00	1-108-374-00	1-108-418-00	0.056	1-108-361-00	1-108-386-00	1-108-430-00				
0.0068	1-108-237-00	1-108-375-00	1-108-419-00	0.068	1-108-249-00	1-108-387-00	1-108-431-00				
0.0082	1-108-356-00	1-108-376-00	1-108-420-00	0.082	1-108-362-00	1-108-388-00	1-108-432-00				



TANTALUM CAPACITORS

CAP. (μF)	RATING → : Use the high voltage rated one. 3.15 VOLT. PART No.	6.3 VOLT. PART No.	10 VOLT. PART No.	16 VOLT. PART No.	20 VOLT. PART No.	25 VOLT. PART No.	35 VOLT. PART No.
0.01					→	→	1-131-396-00
0.015						→	1-131-397-00
0.022						→	1-131-398-00
0.033						→	1-131-399-00
0.047						→	1-131-400-00
0.068					→	→	1-131-401-00
0.1					→	→	1-131-402-00
0.15					→	→	1-131-403-00
0.22					→	→	1-131-404-00
0.33					→	1-131-409-00	1-131-405-00
0.47	–	–	–	–	1-131-412-00	→	1-131-406-00
0.68	–	–	–	1-131-415-00	→	1-131-410-00	1-131-407-00
1.0	–	–	1-131-418-00	–	1-131-413-00	→	1-131-408-00
1.5	–	1-131-421-00	–	1-131-416-00	→	1-131-411-00	1-131-348-00
2.2	1-131-424-00	–	1-131-419-00	–	1-131-414-00	1-131-355-00	1-131-349-00
3.3	–	1-131-422-00	–	1-131-417-00	1-131-362-00	1-131-356-00	1-131-350-00
4.7	1-131-425-00	–	1-131-420-00	1-131-369-00	1-131-363-00	1-131-357-00	1-131-351-00
6.8	–	1-131-423-00	1-131-376-00	1-131-370-00	1-131-364-00	1-131-358-00	1-131-352-00
10	1-131-426-00	1-131-383-00	1-131-377-00	1-131-371-00	1-131-365-00	1-131-359-00	1-131-353-00
15	1-131-390-00	1-131-384-00	1-131-378-00	1-131-372-00	1-131-366-00	1-131-360-00	–
22	1-131-391-00	1-131-385-00	1-131-379-00	1-131-373-00	1-131-367-00		
33	1-131-392-00	1-131-386-00	1-131-380-00	1-131-374-00			
47	1-131-393-00	1-131-387-00	1-131-381-00	–			
68	1-131-394-00	1-131-388-00	–	–			
100	1-131-395-00	–	–	–			

TANTALUM CAPACITORS



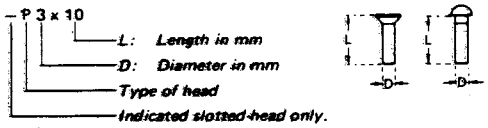
CAP. (μF)	RATING 3 VOLT. PART No.	6.3 VOLT. PART No.	10 VOLT. PART No.	16 VOLT. PART No.	20 VOLT. PART No.	35 VOLT. PART No.
0.033						1-131-273-00
0.047						1-131-274-00
0.068						1-131-275-00
0.1						1-131-276-00
0.15						1-131-277-00
0.22			–	–	1-131-262-00	1-131-278-00
0.33			–	–	1-131-263-00	1-131-279-00
0.47			1-131-169-00	–	1-131-264-00	1-131-280-00
0.68			–	1-131-258-00	1-131-265-00	1-131-281-00
1.0			1-131-254-00	–	1-131-266-00	1-131-282-00
1.5		1-131-250-00	–	–	1-131-267-00	1-131-283-00
2.2		–	–	1-131-259-00	1-131-268-00	1-131-284-00
3.3		–	1-131-255-00	–	1-131-269-00	–
4.7		1-131-251-00	1-131-171-00	–	1-131-270-00	–
6.8		–	–	1-131-260-00	1-131-271-00	–
10	–	–	1-131-256-00	–	1-131-272-00	–
15	–	1-131-252-00	–	1-131-261-00		
22	–	–	1-131-257-00	–		
33	1-131-176-00	1-131-253-00	1-131-173-00	–		
47	1-131-288-00	1-131-174-00	–	–		
100	1-131-177-00					

1/8 WATT CARBON RESISTOR

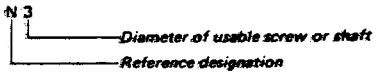
Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.
2.0	—	13	1-246-821-00	91	1-246-831-00	620	1-246-841-00	4.3k	1-246-851-00	30k	1-246-861-00	200k	1-246-871-00
2.2	1-246-751-00	15	1-246-761-00	100	1-246-771-00	680	1-246-781-00	4.7k	1-246-791-00	33k	1-246-801-00	220k	1-246-811-00
2.4	—	16	1-246-822-00	110	1-246-832-00	750	1-246-842-00	5.1k	1-246-852-00	36k	1-246-862-00	240k	1-247-054-00
2.7	1-246-752-00	18	1-246-762-00	120	1-246-772-00	820	1-246-782-00	5.6k	1-246-792-00	39k	1-246-802-00	270k	1-247-046-00
3.0	—	20	1-246-823-00	130	1-246-833-33	910	1-246-843-00	6.2k	1-246-853-00	43k	1-246-863-00	300k	1-247-055-00
3.3	1-246-753-00	22	1-246-763-00	150	1-246-773-00	1.0k	1-246-783-00	6.8k	1-246-793-00	47k	1-246-803-00	330k	1-247-047-00
3.6	—	24	1-246-824-00	160	1-246-834-00	1.1k	1-246-844-00	7.5k	1-246-854-00	51k	1-246-864-00	360k	1-247-056-00
3.9	1-246-754-00	27	1-246-764-00	180	1-246-774-00	1.2k	1-246-784-00	8.2k	1-246-794-00	56k	1-246-804-00	390k	1-247-048-00
4.3	—	30	1-246-825-00	200	1-246-835-00	1.3k	1-246-845-00	9.1k	1-246-855-00	62k	1-246-865-00	430k	1-247-057-00
4.7	1-246-755-00	33	1-246-765-00	220	1-246-775-00	1.5k	1-246-785-00	10k	1-246-795-00	68k	1-246-805-00	470k	1-247-049-00
5.1	—	36	1-246-826-00	240	1-246-836-00	1.6k	1-246-846-00	11k	1-246-856-00	75k	1-246-866-00	510k	1-247-058-00
5.6	1-246-756-00	39	1-246-766-00	270	1-246-776-00	1.8k	1-246-786-00	12k	1-246-796-00	82k	1-246-806-00	560k	1-247-050-00
6.2	—	43	1-246-827-00	300	1-246-837-00	2.0k	1-246-847-00	13k	1-246-857-00	91k	1-246-867-00	620k	1-247-059-00
6.8	1-246-757-00	47	1-246-767-00	330	1-246-777-00	2.2k	1-246-787-00	15k	1-246-797-00	100k	1-246-807-00	680k	1-247-051-00
7.5	1-246-818-00	51	1-246-828-00	360	1-246-838-00	2.4k	1-246-848-00	16k	1-246-858-00	110k	1-246-868-00	750k	1-247-060-00
8.2	1-246-758-00	56	1-246-768-00	390	1-246-778-00	2.7k	1-246-788-00	18k	1-246-798-00	120k	1-246-808-00	820k	1-247-052-00
9.1	1-246-819-00	62	1-246-829-00	430	1-246-839-00	3.0k	1-246-849-00	20k	1-246-859-00	130k	1-246-869-00	910k	1-247-061-00
10	1-246-759-00	68	1-246-769-00	470	1-246-779-00	3.3k	1-246-789-00	22k	1-246-799-00	150k	1-246-809-00	1 M	1-247-053-00
11	1-246-820-00	75	1-246-830-00	510	1-246-840-00	3.6k	1-246-850-00	24k	1-246-860-00	160k	1-246-870-00		
12	1-246-760-00	82	1-246-770-00	560	1-246-780-00	3.9k	1-246-790-00	27k	1-246-800-00	180k	1-246-810-00		

HARDWARE NOMENCLATURE

Screw:



Nut, Washer, Retaining ring:



Reference Designation	Shape	Description	Remarks
		SCREWS	
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		brazier-head screw	

Reference Designation	Shape	Description	Remarks
		SELF-TAPPING SCREWS	
TA		self-tapping screw	ex: TA, P3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
		SET SCREWS	
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
		NUT	
N		nut	
		WASHERS	
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
		RETAINING RINGS	
E		retaining ring	
G		grip-type retaining ring	